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**Term:**

L7 and polyvalent

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Include the elected species or structures, keywords, synonyms, acronyms, and registry numbers, and combine with the concept or utility of the invention. Define any terms that may have a special meaning. Give examples or relevant citations, authors, etc, if known. Please attach a copy of the cover sheet, pertinent claims, and abstract.

Title of Invention: Solution Phase Biopolymer Synthesis  
Inventors (please provide full names): Hubert Koster; Ralph Worl

Earliest Priority Filing Date: This application is a CON of 09/067,337 04/27/98

*\*For Sequence Searches Only\* Please include all pertinent information (parent, child, divisional, or issued patent numbers) along with the appropriate serial number.*

1. (Amended) A liquid phase carrier (LPC) of formula  $Sp(X^1)_n$ , wherein:  
Sp is a polyvalent group that has more than two points of attachment, n is the number of points of attachment in Sp and  $X^1$  is a reactive group for synthesis [synthesis] of biopolymers.

33. A method of solution phase biopolymer synthesis, comprising  
20 the steps of:

- (a) reacting an LPC of formula  $Sp(X^1)_n$  with a first monomer  $N^1$ ;  
(b) separating and purifying the product of step (a) to afford a compound of formula  $Sp(X^1-N^1)_n$ ;  
(c) reacting the product of step (b) with a second monomer  $N^2$ , a  
25 dimer  $N^2-N^3$  or a trimer  $N^2-N^3-N^4$ ; and  
(d) repeating steps (b) and (c) to produce an LPC-bound biopolymer of formula  $Sp(X^1-N^1-N^2-...-N^m)_n$ , where m is 3 to 100, wherein:  
Sp is a polyvalent group that has more than two points of attachment, n corresponds to the number of points of attachment in Sp  
30 and  $X^1$  is a reactive group for biopolymer synthesis;  
 $N^1, N^2, N^3...N^m$  are biopolymer monomers; and

the dimers and trimers comprise the monomers.

48. A method of solution phase biopolymer synthesis, comprising  
35 the steps of:

- (a) reacting an LPC of formula  $Sp(X^1)_n$  with a first monomer  $N^1$ ;  
(b) separating and purifying the product of step (a) to afford a compound of formula  $Sp(X^1-N^1)_n$ ;  
(c) reacting the product of step (b) with a second monomer  $N^2$ , a  
5 dimer  $N^2-N^3$  or a trimer  $N^2-N^3-N^4$ ; and  
(d) repeating steps (b) and (c) to produce an LPC-bound biopolymer of formula  $Sp(X^1-N^1-N^2-...-N^m)_n$ , where m is 3 to 100, wherein:  
Sp is a polyvalent group that has two or more points of attachment, n corresponds to the number of points of attachment in Sp  
10 and  $X^1$  is a reactive group for biopolymer synthesis;  
 $N^1, N^2, N^3...N^m$  are biopolymer monomers;  
the dimers and trimers comprise the monomers; and  
the protocol used in steps (c) and (d) to synthesize the biopolymer, preferably the oligonucleotide, is the phosphoramidite protocol.

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